Atrribute Spectrum on Portable Assisting Door Handle Design

賴信宏、鄧志堅

E-mail: 375437@mail.dyu.edu.tw

ABSTRACT

Simon Dewulf proposed property spectrum to map onto the function. His patent US 20080091671 describes 14 such properties, including: Color, Conductivity, Density, Dependability, Flexibility, Geometry, Information content, Porosity, Size, State, Surface, Symmetry, Time, Transparency, shown in examples among daily life. Each property has its spectrum and thus generating a specific function. Daily life examples are provided. However, the definition of property is not clear. This research uses physical properties as the base to derive 23 properties as Area, Color, Conductivity, Density, Elasticity, Flow rate, Frequency, Hardness, Hollow (a cavity or space in something), Length, Mass, Plasticity, Porosity (pore: any tiny hole admitting passage of a liquid (fluid or gas)), Shape, State, Stiffness, Strength, Surface, roughness, Symmetry, Temperature, Transparency, Velocity, Volume. These properties can be precisely defined in physical measurement. Goldfire search engine is implemented to find out patents and engineering literatures to support the mapping between property spectrum and functions. This result bridges the gap between specific functions and corresponding property spectrum. This research further uses doorknob to apply the property spectrum. The doorknob is intended to be used by the patients and its family member when they access the door in the hospital. Six patents and two doorknobs in the market, HIKARI and LEVERON, are used in the functional analysis as a trigger to find the initial designs. These designs circumvent the original designs. Finally, through the property spectrum, five new designs are derived.

Keywords : Property spectrum, physical property, doorknob, functional analysis, design circumvention.

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